National Institute of Environmental Health Sciences

Epidemic malaria and warmer temperatures in recent decades in an East African highland

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Abstract:

Climate change impacts on malaria are typically assessed with scenarios for the long-term future. Here we focus instead on the recent past (1970-2003) to address whether warmer temperatures have already increased the incidence of malaria in a highland region of East Africa. Our analyses rely on a new coupled mosquito-human model of malaria, which we use to compare projected disease levels with and without the observed temperature trend. Predicted malaria cases exhibit a highly nonlinear response to warming, with a significant increase from the 1970s to the 1990s, although typical epidemic sizes are below those observed. These findings suggest that climate change has already played an important role in the exacerbation of malaria in this region. As the observed changes in malaria are even larger than those predicted by our model, other factors previously suggested to explain all of the increase in malaria may be enhancing the impact of climate change.

Source: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3081772

Resource Description

Early Warning System: ☑

resource focus on systems used to warn populations of high temperatures, extreme weather, or other elements of climate change to prevent harm to health

A focus of content

Exposure : ☑

weather or climate related pathway by which climate change affects health

Ecosystem Changes, Precipitation, Temperature

Geographic Feature: ☑

resource focuses on specific type of geography

Other Geographical Feature

Other Geographical Feature : highlands

Geographic Location: ☑

resource focuses on specific location

Non-United States

Non-United States: Africa

African Region/Country: African Country

Other African Country: Kenya

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Vectorborne Disease

Vectorborne Disease: Mosquito-borne Disease

Mosquito-borne Disease: Malaria

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology: ☑

type of model used or methodology development is a focus of resource

Outcome Change Prediction

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Short-Term (

Vulnerability/Impact Assessment: ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content